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# Souris River Basin Study

## Summary and Recommendations



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## The Study

Problems associated with flooding, inadequate water supplies and variations in water quality are prevalent in the Souris River basin in Canada. The threat of flooding and the water supply and water quality uncertainties act as retarding factors to economic development. The social and economic welfare of the people of the Souris River basin depends to a considerable degree on the way in which its limited water and related resources are managed to serve such uses as agriculture, recreation, assimilation of wastes, and domestic, municipal and industrial water supply. Some of the problems and some development opportunities are affected by international water agreements and by existing and proposed projects and programs in the United States' part of the basin. The problems and economic development opportunities were examined, conclusions drawn and recommendations made which can serve as a guide to future management and development of the water and related resources of the Souris River basin in Canada.

## Organization

Responsibility for the study rested with the Minister of the Environment for Canada, the Minister of the Environment for Saskatchewan, and the Minister of Mines, Resources and Environmental Management for Manitoba. The Souris River Basin Study Board was established to direct the study.

## Planning Objectives

The Board established the following planning objectives.

- Provide sufficient water to meet domestic, municipal, industrial, agricultural, recreation, fish and wildlife demands.
- Reduce the potential for property damage, economic and social disruption and threat of injury or loss of life from floods.
- Maintain or improve the water quality.

- Enhance fish and wildlife resources and water-based recreation.
- Ensure that interjurisdictional obligations are met.
- Preserve or enhance environmental quality.
- Preserve or enhance social and economic well-being.
- Maintain or increase agricultural productivity.
- Minimize threat to known archaeological sites.

## Study Program

The study program consisted of nine study sectors.

1. Public Involvement
2. Flood Damage Reduction
3. Water Supply
4. Water Quality
5. Water-Related Resources
6. Agriculture
7. Economic Studies
8. Detailed Evaluations
9. Legal, Institutional and Administrative Arrangements

## Public Involvement

Continued efforts were made to involve the public at all stages of the study. Early in the study, the Board met with the public in a series of meetings throughout the basin at which the study program was explained and first-hand information was obtained on the nature and scope of the water requirements and problems within the Souris River basin in Canada.

Five public Task Forces were established representing the areas around Weyburn, Estevan and Carnduff in Saskatchewan and around Melita and Souris in Manitoba. As results of the technical studies became available, they were provided to the Task Forces for an independent review.

The chairmen and four delegates from each Task Force met with the Board to present a set of objectives to the Board for basin-wide water planning.

Prior to finalizing its report, the Board held public meetings in Melita, Carnduff, Estevan and Weyburn. At those public meetings, the Board presented its tentative findings for purposes of receiving final comments from the Task Forces and the public. The Board considered all comments received in preparing its final report.

The Board's report, including the nine supplements, is available in public libraries and municipal offices throughout the study area as well as in university libraries in Saskatchewan and Manitoba.



## Recommendations

The recommendations which follow are based on the detailed evaluations carried out and the conclusions reached in the study, the views expressed by the public, and the following basic water management and planning principles.

- In general, water resources within the basin should be developed to meet water supply requirements within the basin.
- Municipal water supply requirements must be met.
- If adequate supplies of water are not available within the basin to meet irrigation, thermal cooling water and industrial water demands, importation of water should be considered only if the benefits to be derived outweigh the costs.
- The cost of developing water management projects, including land drainage and water-related resource projects, should include the cost of mitigation measures or adequate compensation to those who are adversely affected.
- In general, projects to reduce flood damages should have benefit to cost ratios greater than one.
- The potential for future flood damages should not be allowed to increase.
- Use of the floodplain should not conflict with the passage of flood flows.
- In general, quality of water should meet water quality objectives.

## General

1. THE SOURIS RIVER BASIN STUDY REPORT AND ITS SUPPLEMENTS SHOULD BE MADE ACCESSIBLE TO THE PUBLIC AT THE EARLIEST OPPORTUNITY.

2. CONSIDERATION SHOULD BE GIVEN TO THE ESTABLISHMENT OF A MECHANISM WHICH WOULD ALLOW THE PUBLIC TO PROVIDE INPUT DURING THE IMPLEMENTATION PHASE.

3. CONSIDERATION SHOULD BE GIVEN TO WAYS AND MEANS OF IMPROVING THE INTERJURISDICTIONAL EXCHANGE OF WATER-RELATED INFORMATION IN THE SOURIS RIVER BASIN.

4. CONSIDERATION SHOULD BE GIVEN TO THE ESTABLISHMENT OF A BOARD OR COMMITTEE COVERING THE SASKATCHEWAN PORTION OF THE BASIN FOR THE PURPOSE OF ACHIEVING CLOSER LIAISON, COORDINATION AND COMMUNICATION ON ALL ACTIVITIES HAVING TO DO WITH THE CONTROL, DEVELOPMENT AND MANAGEMENT OF WATER RESOURCES.

5. RURAL MUNICIPALITIES IN THE SOURIS RIVER BASIN IN MANITOBA SHOULD GIVE CONSIDERATION TO THE FORMATION OF A CONSERVATION DISTRICT ENCOMPASSING THE MANITOBA PORTION OF THE BASIN TO ACHIEVE BETTER RESOURCE MANAGEMENT IN THE BASIN INCLUDING COORDINATION OF DRAINAGE WORKS.

## Flood Damage Reduction

6. ZONING AND LAND USE REGULATIONS SHOULD BE DEVELOPED AND IMPLEMENTED AS SOON AS POSSIBLE TO PREVENT DEVELOPMENT IN FLOOD RISK AREAS THAT WOULD INCREASE FLOOD DAMAGE POTENTIAL PENDING IMPLEMENTATION OF ZONING AND LAND USE REGULATIONS, ALL LEVELS OF GOVERNMENT SHOULD COOPERATE IN CONTROLLING DEVELOPMENT.

7. A PROGRAM SHOULD BE INITIATED TO ENCOURAGE RELOCATION OF FLOOD PRONE BUILDINGS AND DEVELOPMENTS FROM THE FLOODPLAIN AND INCENTIVES SHOULD BE CONSIDERED FOR THIS PURPOSE.

8. A PROGRAM SHOULD BE DEVELOPED TO ENCOURAGE FLOOD-PROOFING OF EXISTING BUILDINGS AND DEVELOPMENTS SUSCEPTIBLE TO FLOOD DAMAGE WHERE RELOCATION IS NOT PRACTICABLE.

9. EXISTING FLOOD FORECASTING, WARNING AND EMERGENCY ACTION PROGRAMS SHOULD BE REVIEWED FROM TIME TO TIME WITH THE OBJECTIVE OF REDUCING RISKS TO LIFE AND PROPERTY AND INCREASING THE EFFECTIVENESS OF THESE ACTIVITIES.

10. ALL FUTURE ACTIVITY THAT MAY AFFECT THE HYDRAULIC CHARACTERISTICS OF THE FLOODPLAIN SHOULD BE SUBJECT TO REVIEW AND APPROVAL BY THE APPROPRIATE PROVINCIAL AGENCIES BASED ON CAREFULLY DEVELOPED STANDARDS.

11. A LIMITED MAINTENANCE PROGRAM SHOULD BE PROVIDED FOR THE REMOVAL OF OBSTRUCTIONS SUCH AS BEAVER DAMS AND DEBRIS FROM RIVER CHANNELS.

12. LAND DRAINAGE PROJECTS SHOULD BE ALLOWED TO PROCEED PROVIDED THAT, WHERE DEEMED NECESSARY TO OFFSET INCREASED FLOODING PROBLEMS AT DOWNSTREAM LOCATIONS, ARRANGEMENTS ARE MADE FOR APPROPRIATE MITIGATION MEASURES OR COMPENSATION.

13. THE FOLLOWING FLOOD DAMAGE REDUCTION MEASURES SHOULD BE IMPLEMENTED IN WEYBURN AFTER A FLOOD RISK MAP FOR THE CITY HAS BEEN PUBLISHED AND APPROPRIATE ZONING AND LAND USE REGULATIONS HAVE BEEN ESTABLISHED TO PREVENT FURTHER FLOOD PRONE DEVELOPMENT IN THE FLOODPLAIN BELOW THE LEVEL OF THE 500-YEAR FLOOD:

- ENSURE ACCESS TO HOSPITALS, FIRE HALL AND OTHER ESSENTIAL SERVICES DURING FLOOD PERIODS BY RAISING HIGHWAY NO. 35 BRIDGE;

- PROTECT THE CENTRAL BUSINESS AREA BY DYKING THE NORTH SIDE OF THE SOURIS RIVER, RAISING HIGHWAY NO. 39 AND CONSTRUCTING THE TINDALL COULEE DIVERSION;

- ENCOURAGE THE VOLUNTARY REMOVAL OF FLOOD PRONE BUILDINGS FROM THE UNPROTECTED PORTIONS OF THE FLOODPLAIN IN ACCORDANCE WITH THE PROGRAM REFERRED TO IN RECOMMENDATION 7;

- ENCOURAGE FLOOD-PROOFING OF BUILDINGS AND DEVELOPMENTS IN UNPROTECTED AREAS IN ACCORDANCE WITH RECOMMENDATION 8; AND,

- ENSURE THAT FLOOD FORECASTING, WARNING AND EMERGENCY ACTION PROGRAMS FOR THE AREA ARE EFFECTIVE AND PRACTICAL.

14. THE FOLLOWING FLOOD DAMAGE REDUCTION MEASURES SHOULD BE IMPLEMENTED IN THE RIVER PARK AREA NEAR ESTEVAN AFTER A FLOOD RISK MAP FOR THE AREA HAS BEEN PUBLISHED AND APPROPRIATE ZONING AND LAND USE REGULATIONS HAVE BEEN ESTABLISHED TO PREVENT FURTHER FLOOD PRONE DEVELOPMENT IN THE FLOODPLAIN BELOW THE LEVEL OF THE 500-YEAR FLOOD:

- CONSTRUCT A RING DYKE AND TAKE SUCH OTHER MEASURES AS ARE NECESSARY TO ENSURE SATISFACTORY PROTECTION OF THE WATER TREATMENT PLANT DURING FLOOD PERIODS;

- ENCOURAGE THE VOLUNTARY REMOVAL OF FLOOD PRONE BUILDINGS AND DEVELOPMENTS FROM THE FLOODPLAIN IN ACCORDANCE WITH THE PROGRAM REFERRED TO IN RECOMMENDATION 7;

- ENCOURAGE FLOOD-PROOFING OF BUILDINGS AND DEVELOPMENTS IN ACCORDANCE WITH RECOMMENDATION 8;

- CONTINUE TO OPERATE BOUNDARY RESERVOIR TO OBTAIN AS MUCH FLOOD CONTROL AS POSSIBLE WITHOUT JEOPARDIZING ITS PRIMARY WATER SUPPLY FUNCTION; AND,

- ENSURE THAT FLOOD FORECASTING, WARNING AND EMERGENCY ACTION PROGRAMS FOR THE AREA ARE EFFECTIVE AND PRACTICAL.

15. THE FOLLOWING FLOOD DAMAGE REDUCTION MEASURES SHOULD BE IMPLEMENTED AT ROCHE PERCEE AFTER A FLOOD RISK MAP FOR THE AREA HAS BEEN PUBLISHED AND APPROPRIATE ZONING AND LAND USE REGULATIONS HAVE BEEN ESTABLISHED FOR THE AREA TO PREVENT FURTHER FLOOD PRONE DEVELOPMENT IN THE FLOODPLAIN BELOW THE LEVEL OF THE 500-YEAR FLOOD:

- ENCOURAGE THE VOLUNTARY REMOVAL OF FLOOD PRONE BUILDINGS FROM THE FLOODPLAIN IN ACCORDANCE WITH THE PROGRAM REFERRED TO IN RECOMMENDATION 7; AND,

- ENSURE THAT FLOOD FORECASTING, WARNING AND EMERGENCY ACTION PROGRAMS FOR THE AREA ARE EFFECTIVE AND PRACTICAL.

16. THE FOLLOWING FLOOD DAMAGE REDUCTION MEASURES SHOULD BE IMPLEMENTED IN THE BEAVER PARK AREA NEAR OXBOW AFTER A FLOOD RISK MAP FOR THE AREA HAS BEEN PUBLISHED AND APPROPRIATE ZONING AND LAND USE REGULATIONS HAVE BEEN ESTABLISHED TO PREVENT FURTHER FLOOD PRONE DEVELOPMENT IN THE FLOODPLAIN BELOW THE LEVEL OF THE 500-YEAR FLOOD:

- ENCOURAGE THE VOLUNTARY REMOVAL OF FLOOD PRONE BUILDINGS FROM THE FLOODPLAIN IN ACCORDANCE WITH THE PROGRAM REFERRED TO IN RECOMMENDATION 7;

- ENCOURAGE FLOOD-PROOFING OF BUILDINGS AND DEVELOPMENTS IN ACCORDANCE WITH RECOMMENDATION 8; AND,

- ENSURE THAT FLOOD FORECASTING, WARNING AND EMERGENCY ACTION PROGRAMS FOR THE AREA ARE EFFECTIVE AND PRACTICAL.

17. A FLOOD RISK MAP SHOULD BE PUBLISHED AND APPROPRIATE ZONING AND LAND USE REGULATIONS SHOULD BE ESTABLISHED AT RADVILLE TO PREVENT FLOOD PRONE DEVELOPMENT IN THE FLOODPLAIN BELOW THE LEVEL OF THE 500-YEAR FLOOD.

18. A PROGRAM TO REDUCE FLOOD DAMAGE TO FARMSTEADS AND AGRICULTURAL LAND SHOULD BE DEVELOPED AND IMPLEMENTED IN THE REACH OF THE SOURIS RIVER BETWEEN YELLOW GRASS MARSH AND WEYBURN WHICH LIES WITHIN THE JURISDICTION OF THE SOURIS RIVER CONSERVATION AREA AUTHORITY.

19. CONSIDERATION SHOULD BE GIVEN TO A LIMITED, VOLUNTARY PROGRAM FOR THE ACQUISITION OF FLOOD PRONE LANDS ALONG THE MAIN STEM OF THE SOURIS RIVER IN SASKATCHEWAN.

20. THE FOLLOWING FLOOD DAMAGE REDUCTION MEASURES SHOULD BE IMPLEMENTED AT MELITA AFTER A FLOOD RISK MAP FOR THE AREA HAS BEEN PUBLISHED AND APPROPRIATE ZONING AND LAND USE REGULATIONS HAVE BEEN ESTABLISHED TO PREVENT FURTHER FLOOD PRONE DEVELOPMENT IN THE FLOODPLAIN BELOW THE LEVEL OF THE 1976 FLOOD:

- CONSTRUCT A PERMANENT DYKE TO THE 1976 FLOOD LEVEL, FLOOD-PROOF THE ONE TOWN WELL LOCATED OUTSIDE OF THE PERMANENT DYKE AND RAISE PTH NO. 3;

- INCREASE THE WATERWAY OPENING OF PTH NO. 3 BRIDGE WHEN MAJOR REPAIR OR REPLACEMENT IS REQUIRED; AND,

- ENSURE THAT FLOOD FORECASTING, WARNING AND EMERGENCY ACTION PROGRAMS FOR THE AREA ARE EFFECTIVE AND PRACTICAL.

21. THE FOLLOWING FLOOD DAMAGE REDUCTION MEASURES SHOULD BE IMPLEMENTED IN SOURIS AFTER A FLOOD RISK MAP FOR THE TOWN HAS BEEN PUBLISHED AND APPROPRIATE ZONING AND LAND USE REGULATIONS HAVE BEEN ESTABLISHED TO PREVENT FURTHER FLOOD PRONE DEVELOPMENT IN THE FLOODPLAIN BELOW THE 1976 FLOOD LEVEL:

- CONSTRUCT A PERMANENT DYKE TO PROTECT THE WATER TREATMENT PLANT TO THE 1976 FLOOD LEVEL;

- PROVIDE A FLOOD FORECASTING, WARNING AND EMERGENCY ACTION PROGRAM WHICH INCLUDES A PLAN FOR THE LOCATION AND CONSTRUCTION OF EMERGENCY DYKING;

- ENCOURAGE THE VOLUNTARY REMOVAL OF FLOOD PRONE BUILDINGS FROM THE FLOODPLAIN IN ACCORDANCE WITH THE PROGRAM REFERRED TO IN RECOMMENDATION 7; AND,

- ENCOURAGE FLOOD-PROOFING OF BUILDINGS AND DEVELOPMENTS LOCATED BELOW THE 1976 FLOOD LEVEL IN ACCORDANCE WITH RECOMMENDATION 8.

22. THE FOLLOWING FLOOD DAMAGE REDUCTION MEASURES SHOULD BE IMPLEMENTED IN WAWANESA AFTER A FLOOD

RISK MAP FOR THE VILLAGE HAS BEEN PUBLISHED AND APPROPRIATE ZONING AND LAND USE REGULATIONS HAVE BEEN ESTABLISHED TO PREVENT FURTHER FLOOD PRONE DEVELOPMENT IN THE FLOODPLAIN BELOW THE 1976 FLOOD LEVEL:

- PROVIDE A FLOOD FORECASTING, WARNING AND EMERGENCY ACTION PROGRAM WHICH INCLUDES A PLAN FOR THE LOCATION AND CONSTRUCTION OF EMERGENCY DYKING;

- ENCOURAGE THE VOLUNTARY REMOVAL OF FLOOD PRONE BUILDINGS FROM THE FLOODPLAIN IN ACCORDANCE WITH THE PROGRAM REFERRED TO IN RECOMMENDATION 7; AND,

- ENCOURAGE FLOOD-PROOFING OF BUILDINGS AND DEVELOPMENTS LOCATED IN AREAS BELOW THE 1976 FLOOD LEVEL IN ACCORDANCE WITH RECOMMENDATION 8.

23. A LIMITED PROGRAM SHOULD BE CONSIDERED WHEREBY THE GOVERNMENT WOULD PURCHASE FLOODPLAIN LANDS BETWEEN THE INTERNATIONAL BOUNDARY AND HARTNEY FROM FARMERS WHO WISH TO DISPOSE OF SUCH LANDS BUT ARE UNABLE TO DO SO PRIVATELY.

24. PRIOR TO THE CONSTRUCTION OF FLOOD CONTROL AND DRAINAGE WORKS IN NORTH DAKOTA HAVING TRANSBOUNDARY EFFECTS, INTERJURISDICTIONAL AGREEMENT SHOULD BE REACHED ON MITIGATION OR OTHER APPROPRIATE MEASURES WHICH WOULD FULLY PROTECT THE INTERESTS OF MANITOBA AND SASKATCHEWAN.

## Water Supply

25. THE WEYBURN WATER SUPPLY RESERVOIR SHOULD BE ENLARGED AS SOON AS POSSIBLE BY CONSTRUCTING A NEW DAM APPROXIMATELY TWO MILES DOWNSTREAM OF THE EXISTING DAM AT A SITE INVESTIGATED BY PFRA AND KNOWN AS SITE B1.
26. GROUNDWATER SHOULD BE DEVELOPED IN THE VICINITY OF BOUNDARY RESERVOIR FOR PURPOSES OF PROVIDING SUPPLEMENTAL WATER TO THE RESERVOIR DURING PERIODS OF VERY LOW RUNOFF.
27. PATTERSON DAM SHOULD BE CONSTRUCTED AS SOON AS PRACTICABLE FOR WATER SUPPLY PURPOSES.

## Water Quality

28. WEYBURN SHOULD IMPROVE ITS WASTEWATER TREATMENT FACILITIES.
29. SOURIS SHOULD PROVIDE SECONDARY WASTE TREATMENT EITHER BY MEANS OF A SEWAGE LAGOON WITH ADEQUATE STORAGE CAPACITY TO PREVENT WINTER DISCHARGES OR BY A CONVENTIONAL SEWAGE TREATMENT PLANT.
30. THERE SHOULD BE INCREASED SURVEILLANCE OF INTENSIVE LIVESTOCK OPERATIONS TO DETERMINE IF ANY SUCH OPERATIONS ARE CAUSING PROBLEMS; IF PROBLEMS ARE IDENTIFIED, THEN A PROGRAM SHOULD BE DEVELOPED TO COPE WITH THE SITUATION.
31. SURFACE WATER QUALITY OBJECTIVES SPECIFIC TO THE SOURIS RIVER SHOULD BE PREPARED.
32. EXISTING WATER QUALITY MONITORING PROGRAMS WITHIN THE SOURIS RIVER BASIN SHOULD BE REVIEWED WITH RESPECT TO THEIR ADEQUACY AND ACTION TAKEN TO PROVIDE IMPROVEMENTS, AND FURTHER, THE OPERATION OF THE AUTOMATIC MONITORING STATIONS AT THE TWO INTERNATIONAL BOUNDARY CROSSINGS SHOULD BE CONTINUED.

## Water-Related Resources

33. THE FOLLOWING POSSIBILITIES SHOULD BE CONSIDERED FOR STUDIES AFTER THE NEED AND JUSTIFICATION FOR FURTHER RECREATIONAL DEVELOPMENT HAS BEEN DETERMINED:
  - ESTABLISHMENT OF A PROVINCIAL PARK OR EQUIVALENT RESERVE IN THE SOURIS RIVER VALLEY BETWEEN ROCHE PERCEE AND A POINT SOUTH OF HIRSCH;
  - DEVELOPMENT OF A SMALL RESERVOIR ON LIGHTNING CREEK NEAR REDVERS AND ESTABLISHMENT OF A REGIONAL PARK AT THE RESERVOIR SITE; AND,
  - DEVELOPMENT OF A REGIONAL PARK AT MOOSE MOUNTAIN LAKE AND RESERVOIR OPERATION GUIDELINES COMPATIBLE WITH WATER-BASED RECREATION NEEDS.
34. FURTHER STUDY SHOULD BE INITIATED TO IDENTIFY SPECIFIC SITES FOR SMALL DAMS AND ROCK GROINS IN THE SOURIS RIVER IN MANITOBA AND IN SASKATCHEWAN DOWNSTREAM FROM ROCHE PERCEE FOR PURPOSES OF ENHANCING SPORT FISHING OPPORTUNITIES.
35. THE TATAGWA LAKE PROJECT SHOULD BE ALLOWED TO PROCEED IN ACCORDANCE WITH THE APPLICATION FROM THE TATAGWA CONSERVATION AREA AUTHORITY IF ADEQUATE SAFEGUARDS ARE PROVIDED TO ENSURE THAT ANY RESULTING CHANGES IN WATER QUANTITY AND QUALITY WILL NOT CAUSE ADVERSE EFFECTS DOWNSTREAM.
36. THE PROPOSED KISBEY FLATS AND MAXIM LAKE WATERFOWL PROJECTS SHOULD BE SUBJECTED TO A THOROUGH EXAMINATION OF THE SOCIAL, ECONOMIC AND ENVIRONMENTAL IMPACTS PRIOR TO DEVELOPMENT.
37. THE PLUM LAKES PROJECT SHOULD NOT BE ALLOWED TO PROCEED UNTIL OBJECTIONS OF THE LAND OWNERS IN THE PROJECT AREA HAVE BEEN SATISFACTORILY RESOLVED.



# Summary of Water Problems and Study Conclusions

Many alternative projects and plans were examined and analyzed during the study with the objective of reducing flood losses, meeting existing and future demands for water and preserving and enhancing the social and economic well-being of the people in the basin. The Board, with the guidance of the five public Task Forces, arrived at the conclusions which follow.

**Flooding in upland areas** during a series of wet years is a serious problem, especially in Saskatchewan. The problem has been complicated by the effects of road construction and unauthorized drainage ditches. Such flooding was not specifically addressed by the Board. It was noted that the matter of drainage and related concerns is being examined by the Saskatchewan Government on a province-wide basis.

**Flooding of agricultural areas in the Souris River Valley** is a natural phenomenon. It was found that, below Weyburn, upstream drainage works have increased the volume of spring runoff but have had no significant effect on flood peaks. Flows in late spring and early summer, after the peak, are higher and more prolonged than under natural conditions. Summer floods, resulting from rainfall, are experienced in some areas in the Weyburn-Estevan and the International Boundary-Hartney reaches.

No practical structural measures can be put into place to significantly reduce agricultural flood damage. Damages in the future could be reduced by relocating or protecting farm buildings. Agricultural enterprises located on the floodplain will have to continue to contend with periodic flooding.

**Flood damage in urban communities** has occurred because of a lack of appropriate zoning and land use regulations.

Studies indicated that in no community except Melita could protection against floods be provided at a cost equivalent to the benefits. However, some measure of protection, particularly for essential services, is warranted.

If Rafferty Reservoir was built, its storage capacity would be able to provide some measure of relief to those in the valley near Estevan and at Roche Percee. The construction of this reservoir cannot be justified solely on the basis of its flood reduction capability.

**Water supply in Saskatchewan** is of concern because the existing supplies could not satisfy

the water demands at Weyburn or at Boundary Reservoir following a series of below-average runoff years. It has been concluded that the enlargement of the Weyburn Reservoir and the development of the groundwater in the Estevan Valley Aquifer would meet the foreseeable future water supply needs in Saskatchewan. If a large industrial demand for water arises, water could be imported into the basin from Lake Diefenbaker via the Qu'Appelle River.

**Water supply within the Souris River basin in Manitoba** is dependent to a considerable degree on the flow of the river and its tributaries. No reservoirs exist within this portion of the basin which significantly affect flows in the main stem of the Souris River. In drought years, flows in the Souris River have been dependent on releases from reservoirs in North Dakota.

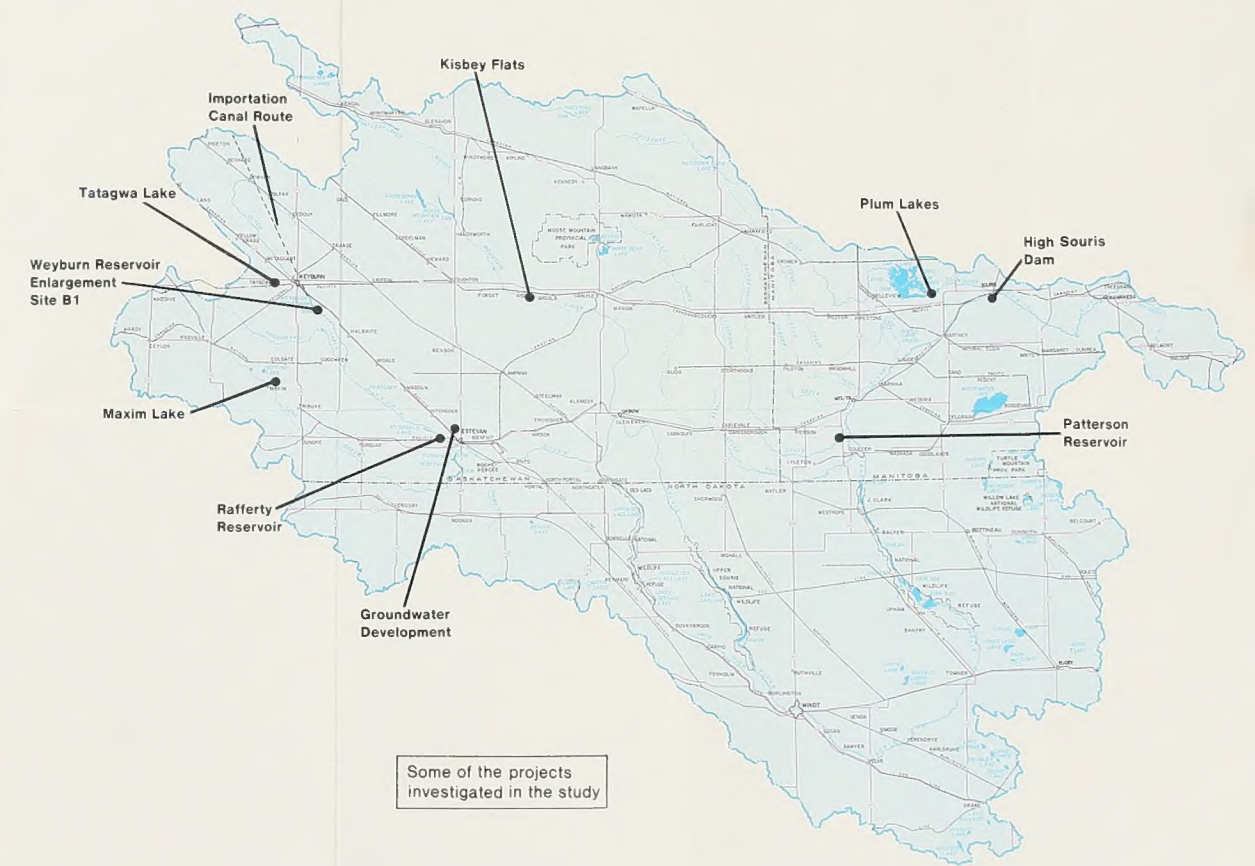
It has been concluded that Patterson Reservoir, located on Gainsborough Creek near the International Boundary, would meet the water supply needs in Manitoba for the foreseeable future. It would ensure a live stream in the Souris River for domestic, livestock and municipal purposes and provide some capacity for irrigation and recreational developments.

When a further significant demand for water arises, the construction of the High Souris Dam would be required.

**Water quality** in streams in the basin is relatively poor as a result of natural conditions rather than human activity. Thus, a significant improvement in water quality cannot be expected. It is essential that man's work not cause a worsening of water quality.

It has been concluded that continuing attention should be given to the treatment of wastewater being discharged into the streams.

**Recreation, fish and wildlife** resources are not abundant in the Souris River basin. The satisfaction of needs for these water-related resources can be achieved more readily by conservation and long-term management of existing habitats than by intensive programs of habitat improvement. There are many potential projects which could enhance opportunities in the basin but only a few of these have a direct relationship with water management. It has been concluded that four waterfowl enhancement schemes, Tatagwa Lake, Maxim Lake, Kisbey Flats and Plum Lakes, are worthy of consideration.



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